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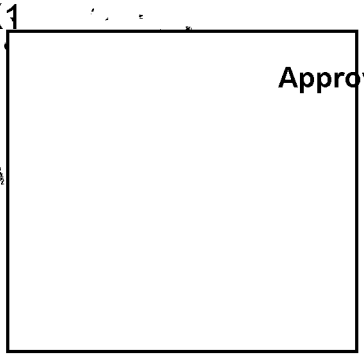
FOOTNOTE ON DISASTERS IN SOVIET ARCTIC

During the 1937 navigational season, a total of 26 Soviet ships were caught in the Arctic ice. A Soviet journal in 1941, recounting the events of that season reported, "In the history of the conquest of the Arctic, the navigational season of 1937 is known as a shameful example of a large accumulation of serious errors as well as sabotage."



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SOVIET RESEARCH AND EXPLORATION

IN THE ARCTIC

The recent establishment of an air base on polar ice 200 miles northeast of Canada represents by Soviet standards a normal scientific and logistical activity that has been evolved out of the experience of three decades of Arctic land, air, and sea activities. The air base consisting of eight aircraft, fifty people, eight tents and a 3,000 foot airstrip is utilized for launching mobile scientific teams to predetermined points of a planned network to undertake a whole range of observations: subsurface, surface, and upper air. This method represents one of five developed by the Soviets to acquire physical environmental data. The others are: (1) the net of coastal Polar stations, (2) drifting ice-breakers equipped with special laboratories, and pushing poleward to expand the effective range of ship navigation, (3) the passive ice-floe mounted with elaborate instrumentation and facilities for year-round observations, and (4) "Flying Laboratories" that make non-stop flights to the North Pole and return for weather, ice, and magnetic observations. Of the five, the one most widely used was the mobile scientific detachment, which is credited with having covered uniformly with scientific observation during the postwar period an area of over 5,000,000 sq. kms., or 38 percent of the total Arctic Basin.

The history of Arctic research dates to the earliest days of the communist state, as a part of the basic Soviet plan to map, inventory,

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and develop the natural resources of the country. In 1921 Lenin decreed the Floating Scientific Marine Institute and the Institute for the Study of the North for exploration and research in the Arctic seas. During this early 15-year period effort was limited to the charting of the Arctic coast and the adjacent seas. By 1932 when the Chief Administration of the Northern Sea Route was organized to establish a wholly Soviet transport link between the west and the east, a new demand arose for physical environmental data, particularly after the premature expansion of transport activity met with a series of disasters in 1935-1936 and demonstrated the inadequacy of physical environmental data provided by coastal Polar stations. Information on ice characteristics and dynamics for effective forecasting developed a need for the whole range of data from the bottom of the Arctic Basin to the upper reaches of the Arctic air. This led in 1937 to the launching of the first of the drifting scientific stations mounted on (1) ice floes (NP-1) and (2) ice-breakers (the "G. Sedov"). The mounting of NP-1 was significant because it was the first landing on ice at the Pole and the first installation of a research station on a drifting ice-floe. The former was the consequent extension of the experience of Soviet Polar aviation which began its activity in 1924. By 1941 Polar aviation extended this early achievement of landing on unprepared and untested ice when the success of the first of the mobile scientific detachments was achieved. Interrupted by the war, this airborne technique became the principal method for planned, systematic wide-area surveys and observations. The distinctive contributions of each of the methods was

recognized and each was retained as it became proven. In 1950, another drift station, the NP-2, was launched because it could yield continuous data the year-round.

The third, and major phase, of Soviet Arctic Basin activities got underway with the launching of the huge combination air and drift expedition in 1954 to tackle the collection of physical environmental data in the so-called Central Arctic. Two drift stations, NP-3 and NP-4, were mounted, a mobile scientific research detachment of several groups fanned out, and Flying Laboratories operated from continental bases on non-stop flights to the Pole. The 1954 Expedition has been described as marking the transition from former expeditionary operations to a systematic scientific research on a routine basis. The continuous operation of NP-4, followed by the launching of NP-5 and, most recently NP-6, points to the probable validity of the Soviet boast. The most recent establishment, a base for a mobile scientific research detachment 200 miles northwest of Canada is an eastward extension of the Soviet network of observation points for data collection.

The growth of the Soviet Arctic activity from a sporadic expeditionary level to a large, systematic, and continuous program reveals a significant capability in depth and number. Teams are rotated, and the youthful age indicates a broadening of the base in which substantial experience will accumulate. Over 90 polar scientists and technicians were available for staffing the Soviet Antarctic base without affecting the depth of skill for the Arctic needs.

The growth of the Soviet polar activity is most impressive in the comprehensiveness of its topical scope, as well as in the extent of its spatial coverage. It is estimated that some observational data have been collected for over two-thirds of the Polar Basin, with the bulk of the remaining area being in the sector of 160°W and 70°W.

The topical scope has expanded significantly from the early ice reconnaissance and weather reporting required initially for navigation to a comprehensive range of studies including hydro-geology, oceanography, magnetism, gravimetry, ionospheric physics and upper air physics arranged in over a dozen different topics. The full appreciation that all phenomena in nature are interlinked and interdependent has been reflected in the unique Soviet programming of research that considers the study of the Earth as a whole. Thus, the intensive study of the Arctic Basin is now being supplemented by a very impressive Soviet Antarctic Expedition engaged in a substantially broader program than is called for by the IGY. Both of these, in turn, are being linked by the biggest oceanographic and hydrometeorological program launched yet.

This long, and intensive history of Arctic activity in which air power has played a leading role has ominous overtones in a threatening capability for transpolar air operations. The comprehensive scope and extent of Arctic activity has given the Soviets a formidable mass of physical environmental Arctic data unmatched by the rest of the world. This may well give the Soviets a superior advantage in understanding variations in natural conditions and in forecasting meteorological, glaciological, magnetic, and ionospheric phenomena that are important

to surface and submarine navigation, and communications. Gravity observations resulting from Soviet Arctic programs have particular significance to Soviet capabilities in positioning long-range missiles. Any long arc between the USSR and the US traverses much of the Arctic. The Soviets thus by their gravity observations will have (a) necessary data for computing corrections in range and bearing at the launching point, and (b) the necessary data for computing the earth's exterior gravity field and its effects upon the missile flight. Aside from the obvious gains that this Arctic superiority makes available to Soviet military capabilities, not the least of them will be the growing ability to rapidly mount forward, offense bases for air or missile attack that can be staged under cover of the winter night.

Finally, there is the vital know-how that has been developed in a sizeable cadre of trained, experienced Polar scientists, technicians, and administrators operating within a formidable array of scientific and economic organizations.

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